VOLUME 3. AIR OPERATOR TECHNICAL ADMINISTRATOR

CHAPTER 7. AVIATION WEATHER INFOTRMATION SYSTEMS

SECTION 5. ENHANCED WEATHER INFORMATION SYSTEMS

1453. GENERAL. Enhanced weather information systems (EWINSs) incorporate advanced technical capabilities, are approved by the Federal Aviation Administration (FAA), and provide certificate holders with aviation weather data which permits quick, flexible, and operationally efficient responses to changing meteorological conditions. These systems detect, track, report, and forecast ordinary weather conditions as accurately as they do adverse weather phenomena. An EWINS uses reported and forecast weather conditions not only to aid in controlling daily flight movements, but also to permit short and long term operational planning for enhancing an operator's capability to protect schedules and to use equipment and personnel with maximum efficiency.

1455. CONCEPT OF AN EWINS. The basic concept of an EWINS is to use a weather information system for maximum effectiveness in tracking, evaluating, reporting and forecasting the presence or absence of adverse weather phenomena. The basic requirement of an EWINS is it must always incorporate a subsystem capable of obtaining, evaluating, and disseminating reports and forecasts of adverse weather phenomena. Adverse weather phenomena, by definition, can directly diminish flight operation safety. Consequently, an Adverse Weather Phenomena Report and Forecasting subsystem must effectively, rapidly, and reliably process weather information from the time the information is obtained from approved sources until it is used by flightcrews and other operational control personnel in making decisions concerning the control of flight movements.

1457. CHARACTERISTIC FUNCTIONS OF AN EWINS. There are three basic functions of an EWINS. These functions are an inward flow of weather information, analysis and evaluation of the information, and an outward flow of the information in an operationally appropriate format. Additional components include a policies and procedures manual, training programs, quality assurance procedures, work facilities, and equipment.

A. An EWINS must include sufficient procedures, personnel, and communication and data processing equipment, to effectively obtain the aeronautical weather data described in section 2 from approved sources. The communication and data processing equipment and procedures must include back up capabilities to provide uninterrupted operation should any single component of the system fail.

B. An EWINS must have the necessary qualified personnel, procedures, and equipment for effective analysis and evaluation of aeronautical weather data and of the affect of changing weather conditions on current and future operations. Based on conclusions derived from EWINS data, authorized personnel may prepare and issue flight movement forecasts, forecasts of adverse weather phenomena, and other meteorological advisories to control flight operations. Personnel authorized to analyze and evaluate weather data for the purpose of making and issuing forecasts must be trained and qualified in accordance with paragraphs 1463 and 1465.

C. An EWINS must have the necessary communication systems, data processing equipment, procedures, and personnel to provide rapid, timely, and reliable dissemination of weather information used to make operational decisions. Flight movement forecasts, adverse weather phenomena forecasts, and any other meteorological advisories must be appropriately disseminated to flightcrews during preflight planning and while they are en route. The same information must be provided to other operational control elements within the operator's organization.

1459. FAA POLICIES CONCERNING EWINS. The following are FAA policy statements concerning EWINSs used by Title 14 of the Code of Federal Regulations (14 CFR) Parts 121 and 135 operators.

A. Each EWINS must be approved by the FAA. FAA approval of an EWINS includes approval of an Adverse Weather Phenomena Reporting and Forecasting subsystem and requires certificate holders

to use that subsystem.

B. An EWINS must provide rapid and reliable dissemination of weather data through communication channels independent of any air traffic control system.

C. Each EWINS includes capabilities for continuous quality assurance and authoritative procedures for correcting discovered deficiencies.

D. Except for provisions for quality assurance, any other appropriate part of an EWINS may be owned and/or operated by a private weather company, private communication company, or by another U.S. Parts 121 or 135 operator.

E. An aviation meteorologist or a dispatcher with FMF authority must continuously be on duty when any flight operations are in progress.

F. Properly trained and qualified aviation meteorologists and dispatchers with FMF authority who operate an EWINS may be authorized to prepare and issue flight movement forecasts.

G. Flight movement forecasts are official weather forecasts which control specific flight operations for a particular operator.

H. Aeronautical weather data provided by an EWINS satisfies all regulatory requirements for each Part 121 and/or Part 135 certificate holder specifically authorized to use a particular EWINS.

1461. EWINS POLICIES AND PROCEDURES MANUAL.

A. Responsibility for Preparing an EWINS Manual. A certificate holder or a combination of certificate holders and noncertified organizations may jointly operate an EWINS. The operator or operators of an EWINS must develop, prepare, and keep current an EWINS policies and procedures manual.

(1) If an EWINS is operated by a single certificate holder, that certificate holder shall be responsible for preparation and currency of an EWINS policies and procedures manual. This manual shall be incorporated as part of the manual requirements of section 121.133 or section 135.21.

(2) If an EWINS is cooperatively or contractually operated by more than one organization (at least one of which must be a certificate holder authorized to operate under Part 121 or Part 135), the EWINS policies and procedures manual must establish who is responsible for preparing and keeping the manual current. Each cooperating certificate holder must incorporate appropriate provisions of the EWINS manual in its manual.

(3) A certificate holder who does not operate an EWINS and does not participate with others in a cooperative EWINS arrangement may, through contractual arrangements, acquire aeronautical meteorological data from an approved EWINS. In this case the certificate holder must use all the weather products provided by the approved EWINS for control of its flight operations. The contracting certificate holder must incorporate in its manual appropriate provisions of the approved EWINS policies and procedures manual. Additionally, the contracting certificate holder's manual must contain specific restrictions on use of forecasts from sources other than the approved EWINS.

B. Content of an EWINS Manual. An EWINS policies and procedures manual must include descriptions of the structure of the EWINS and how the EWINS operates. This manual must provide information concerning the following areas:

(1) Facilities:

(a) The location of the primary meteorological office.

(b) Descriptions of, and instructions for, using communications and data processing equipment.

(2) Weather Sources:

(a) A list of sources for weather reports.

(b) A list of sources for weather forecasts.

(c) Conditions and limitations for use of private weather services as sources for reports and forecasts.

(3) Personnel:

(a) Qualification standards for dispatchers with FMF authority and aviation meteorologists.

(b) Training requirements for dispatchers with FMF authority and aviation meteorologists.

(c) Staffing requirements for the EWINS.

(4) Operating Policies and Procedures:

(a) Detailed procedures for obtaining, evaluating, and disseminating aviation weather.

(b) Procedures for obtaining PIREPs/AIREPs.

(c) Procedures for operating in areas affected by adverse weather.

(d) A description of the EWINS interface with dispatch/operational control elements.

(e) Normal, abnormal, and emergency procedures.

(f) The identification, authorization, and responsibility of persons permitted to make flight movement forecasts.

(5) Quality Assurance Procedures:

(a) Procedures to assure accuracy of the EWINS weather reports and forecasts.

(b) Procedures to measure effectiveness of the EWINS communication capabilities.

(c) Policies and procedures for correcting deficiencies detected within an EWINS.

1463. PERSONNEL QUALIFICATIONS. Aviation meteorologists and dispatchers with FMF authority who are part of an EWINS must meet the following special qualifications:

A. Aviation Meteorologist. An aviation meteorologist must have a degree in meteorology (or its equivalent) awarded by an accredited university or college and be certified by his employer as competent to perform aviation forecasting duties. Each EWINS operator must have a program which ensures that aviation meteorologists understand that their professional actions influence aviation safety, and the required operational and regulatory responsibilities for persons using meteorologists' forecasts. In addition, aviation meteorologists must receive briefings, as necessary, to obtain current information on changes to the operations controlled by their forecasts. A briefing and training scheme for aviation meteorologists must be included in the EWINS policies and procedures manual. Training can be self-directed study, briefings, and/or formal training. It must include information on weather requirements of 14 CFR which regulate certificate holders who use the EWINS. Traditional types of professional meteorological training are encouraged.

B. Dispatcher with FMF Authority. A dispatcher who has satisfactorily completed an approved training program which includes the training specified in paragraph 1465, may be authorized by his employer to make and issue flight movement forecasts.

1465. TRAINING FOR DISPATCHERS WITH FMF AUTHORITY

A. Dispatchers shall not be authorized to make and issue flight movement forecasts unless they have satisfactorily completed an FAA-approved initial training course in meteorology. In addition, dispatchers with FMF authority must satisfactorily complete an FAA-approved recurrent training course in meteorology at least once every 24 months. Recurrent training modules may be scheduled at periodic intervals that provide for a complete cycle of recurrent meteorological training every 24 months. Any dispatcher with FMF authority who is also assigned duties in domestic or flag operations under Part 121 must satisfactorily complete the training and qualification requirements specified in Subparts N and P of Part 121 in addition to the meteorological training specified in this paragraph. Any meteorological training required by Subpart N, however, is satisfied by the meteorological training specified in this paragraph.

B. Approved initial and recurrent meteorological training curriculum segments must include training in at least the following subjects:

(1) Basic Properties of the Atmosphere:

- Composition
- Density
- Measurement
- General circulation
- Solar heating

(2) Clouds:

- Formation
- Condensation
- Precipitation
- Use of cloud knowledge in forecasting
- Stability and instability

(3) Air Mass Analysis:

- Classification
- Flying conditions
- Use of air mass knowledge in forecasting

(4) Analysis of Fronts:

- Structure and characteristics
- Cloud sequences in fronts

- Establishing positions of fronts by cloud types
- Fronts and seasonal variations
- Flying weather in fronts
- Cyclones and anticyclones

(5) Fog:

- Types
- Cause and formation

(6) Ice:

- Types
- Cause and formation

(7) Thunderstorms, Hurricanes, Tornadoes:

- Causes
- Methods of forecasting
- Structure and complexity of internal winds
- Hail (cause and formation)

(8) Windshear:

- Detection
- Reporting
- Cause
- Avoidance technique

(9) Turbulence:

- Determining the smooth level of flights
- Cause

(10) Interpreting Weather Data:

- Weather sequences and symbols
- Weather map symbols
- Drawing a weather map
- Reading a weather map
- Upper level charts
- Adiabatic charts
- Winds aloft charts
- Instruments used to gather and record weather data
- Radar products and images
- Satellite products and images

(11) Weather Forecasting:

- Extrapolation
- Movement of fronts and air masses
- Isobars
- Barometric tendency
- Use of advanced technology in weather forecasting techniques

(12) Application of Weather Knowledge:

- Planning
- Domestic
- Oceanic (if applicable)
- International (if applicable)

1467. APPROVAL OF AN EWINS.

A. Requests for Approval. Parts 121 and 135 operators are not required to use an EWINS. These operators, however, may elect to establish and use an EWINS. All EWINS must be approved by the FAA. An operator or group of operators choosing to establish an EWINS must make a written request for approval. The letter must describe the planned EWINS in sufficient detail to allow the POI (or POIs) to evaluate the proposal. The letter must be accompanied by the proposed EWINS policy and procedures manual, details of any contractual arrangements, and resumes of the key personnel employed by any commercial weather service to be involved in the proposed EWINS.

B. Evaluations and Inspections of an EWINS. Before approving an EWINS, POIs must evaluate the material submitted with the request for approval and conduct inspections of the facilities, equipment, and other components. POIs must also verify the professional qualifications and training of aviation meteorologists and dispatchers with FMF authority who will be used in the EWINS. When the POI has determined the proposed EWINS has the characteristic functions described in paragraph 1457, and complies with the FAA policy statements in paragraph 1459, and meets the criteria specified in paragraphs 1461, 1463, and 1465, the EWINS may be approved.

C. Approval or Denial of an EWINS.

(1) Approval for a certificate holder to use an EWINS shall be accomplished by issuing operations specifications Operations Specification (OpSpec)A010 with reference to the EWINS policy and procedures manual to be used by the operator. The original date of the EWINS manual, and the last revision date, shall also be referenced in OpSpec A010. Any revisions to the EWINS and/or the EWINS manual should be eval-

uated and inspected by the FAA as soon as possible, but not later than 15 days after the revision is made.

(2) If, after evaluation and inspection, the POI determines a proposed EWINS does not meet the requirements of this handbook, all submitted materials shall be returned to the operator with an explanatory letter. This letter must state the proposed EWINS is not approved and clearly explain why. If an EWINS has been approved, and a POI determines later that the EWINS does not continue to meet the requirements of this handbook, the POI shall immediately inform the certificate holder. If the certificate holder does not take immediate and appropriate corrective action the POI must take action to amend paragraph A010 of the operations specifications and rescind approval of the EWINS.

1468-1472. RESERVED.

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